

CLAIMS

1. A method for desalting water, comprising:

salt water is introduced into a membrane module and is separated into desalted water and concentrated salt water;

the salt water is conveyed at an increased pressure level from the pressure-compensating device, which comprises several piston devices, to the membrane module;

the concentrated salt water is discharged from the pressure-compensating device, transferring its pressure energy in the process;

salt water is introduced into the pressure-compensating device at a pressure level by means of a feed pump;

in front of the piston, the piston devices contain an intake chamber, which is connected to the feed pump and the membrane module, and in the rear of the piston they contain a discharge chamber, which is connected to the membrane module and a discharge line for concentrated salt water; and

during operation a pressure is exerted on a part of the piston by means of a hydraulic connection between the pressure chambers, which are located at the piston rear sides of the piston devices, to assist the pressure level, which is exerted on the piston by the concentrated salt water that has been introduced into the discharge chambers.

2. The method according to claim 1, wherein concentrated salt water alternately is introduced into the discharge chamber of one of several piston devices, whereby simultaneously the salt water conveyed from the intake chamber of the same piston device to the membrane module, and in that simultaneously salt water at a first pressure level is introduced into the intake chamber of a different piston device, whereby the concentrated salt water is discharged at a low pressure level from the discharge chamber of the same piston device.

3. The method according to claim 2, wherein the piston devices of the pressure-compensating device are controlled in such a manner that simultaneously salt water is introduced into the intake chamber of at least one of the piston devices, concentrated salt water is discharged from the discharge chamber of the same piston device, concentrated salt water is introduced into the discharge chamber of at least one

other piston device, and salt water is conveyed from the intake chamber of the same piston device into the membrane device.

4. The method according to claim 1, characterized in that the piston devices are regulated by controllable intake- and discharge valves.

5. The method according to claim 1, wherein the pressure exerted on a part of the piston is a continuous pressure.

6. A reverse osmosis device for the continuous desalting of water, in particular for the desalting of sea water, comprising:

- a membrane module to separate supplied salt water into desalted water and concentrated salt water;

- a pressure-compensating device, comprising several piston devices, to continuously introduce the salt water at an increased pressure level into the membrane module and to discharge the concentrated salt water, transferring its pressure energy in the process,

- a feed pump to introduce salt water at a pressure level into the pressure-compensating device, whereby

- in front of the piston, the piston devices possess an intake chamber, which is connected to the feed pump and the membrane module, and

- in the rear of the piston, the piston devices possess a discharge chamber, which is connected to the membrane module and to a discharge line for concentrated salt water,

- in the rear of the piston, the piston devices additionally possess a pressure chamber and the pressure chambers are hydraulically connected to each other, so that during operation a continuous pressure can be exerted on a part of the piston to assist the pressure, which is exerted on the piston by the concentrated salt water introduced into the discharge chamber.

7. The device according to claim 5, wherein the piston devices are controlled in such a manner that simultaneously salt water is introduced into the intake chamber of at least one piston device, concentrated salt water is discharged from the discharge chamber of the same piston device, concentrated salt water is introduced into the discharge chamber of at least one other piston device, and salt water is conveyed from the intake chamber of the same piston device to the membrane module.

8. The device according to claim 6, wherein the piston devices are regulated by controllable intake- and discharge valves.

9. The device according to claim 7, wherein the connecting lines from the membrane module to the discharge chambers of the piston devices, and the lines to discharge concentrated salt water from the discharge chambers are provided with actively controlled valves.

10. The device according to one of claim 5, wherein the pressure-compensating device contains three identical piston devices.

11. The device according to one of claim 5, wherein the pistons of the piston devices are designed in such a manner that the pressure level prevailing in the pressure chamber can act upon one quarter of the surface area of the piston rear side and the pressure level prevailing in the discharge chamber can act upon three quarters of the surface area of the piston rear side.